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Engine Water Pump

Saturn SL2

Well Pump Replacement

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SL2 Water Pump Replacement w/PICS

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01-19-2010, 06:49 AM

#1

Sevillian273

Member

Join Date: Jul 2009
Location: Florida
Posts: 105

2001 SL2

SL2 Water Pump Replacement w/PICS

2001 SL2 with 89,565

This was an inexpensive fix and fairly easy if you remove the wheel:

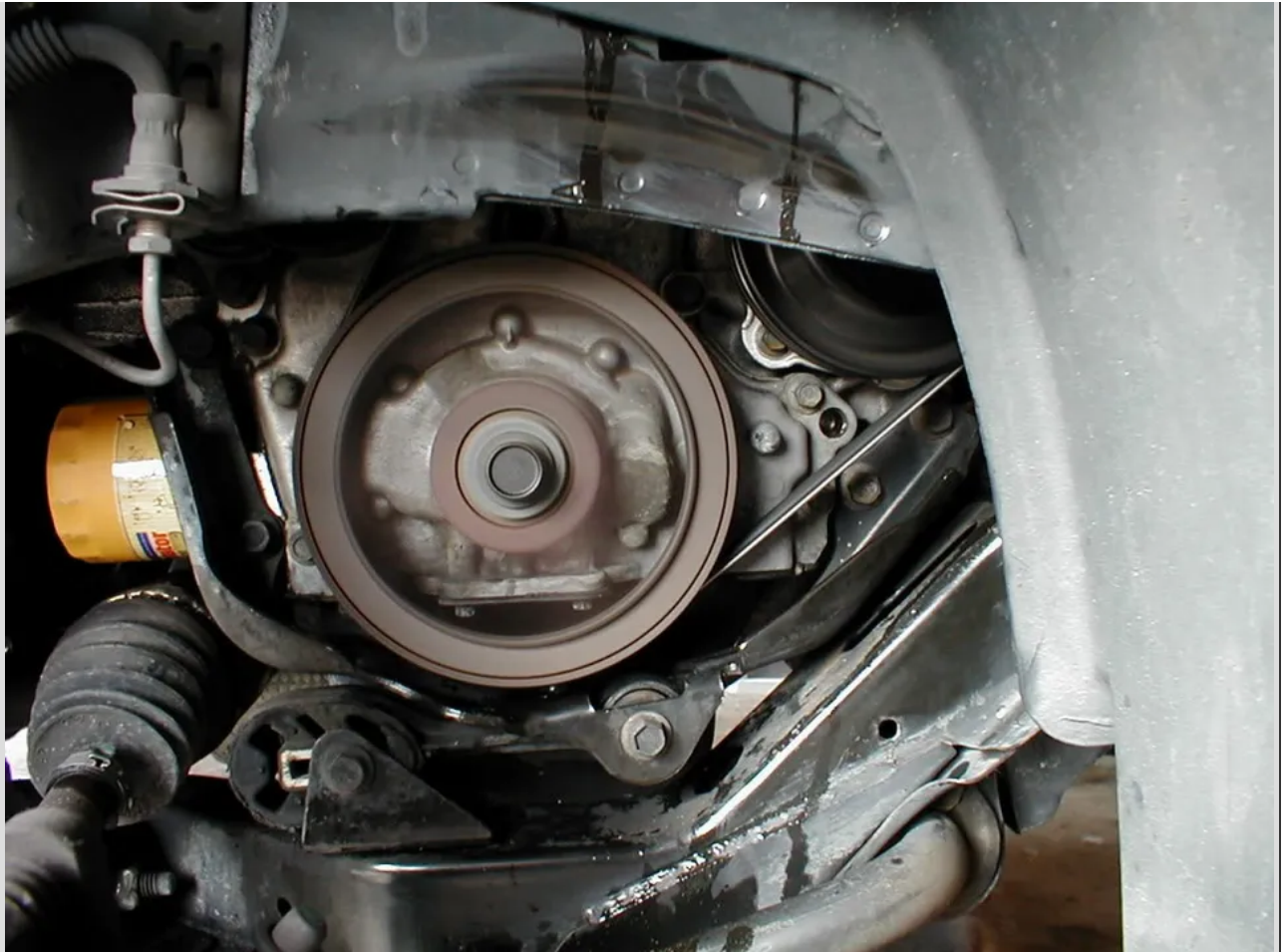
Tools:

- Jack
- Jackstand
- Tire iron
- 13/16 Socket
- 10mm deep
- 10mm shallow
- 3" extension
- 14mm open-end
- Hammer
- Flathead
- Blue RTV

Apply E-brake, block the rear wheels, Raise the front passenger side, and set the framerrail on a jackstand like so:



Remove the wheel and 2 inner splash sheilds. (3 plastic rivets)



(^^This pic was shot after completion)

Before removing the belt, crack the water pump pulley bolts loose while the belt tension keeps the pulley from moving. Use the 13/16 to rotate the crankshaft to get to all 3 bolts(10mm). If there's not enough tension on the belt you will need to find a way to hold the pulley such as a strap-wrench.



After breaking the bolts loose, use 14mm box wrench to release the tensioner. From the bottom, pull the wrench toward the front of the car. Tensioner shown here:



With the belt removed, take the 3 10mm bolts out to remove the pulley and set it on the frame rail in front of the engine:



^^That's a 89k mile oem stamped steel pump. Nasty.

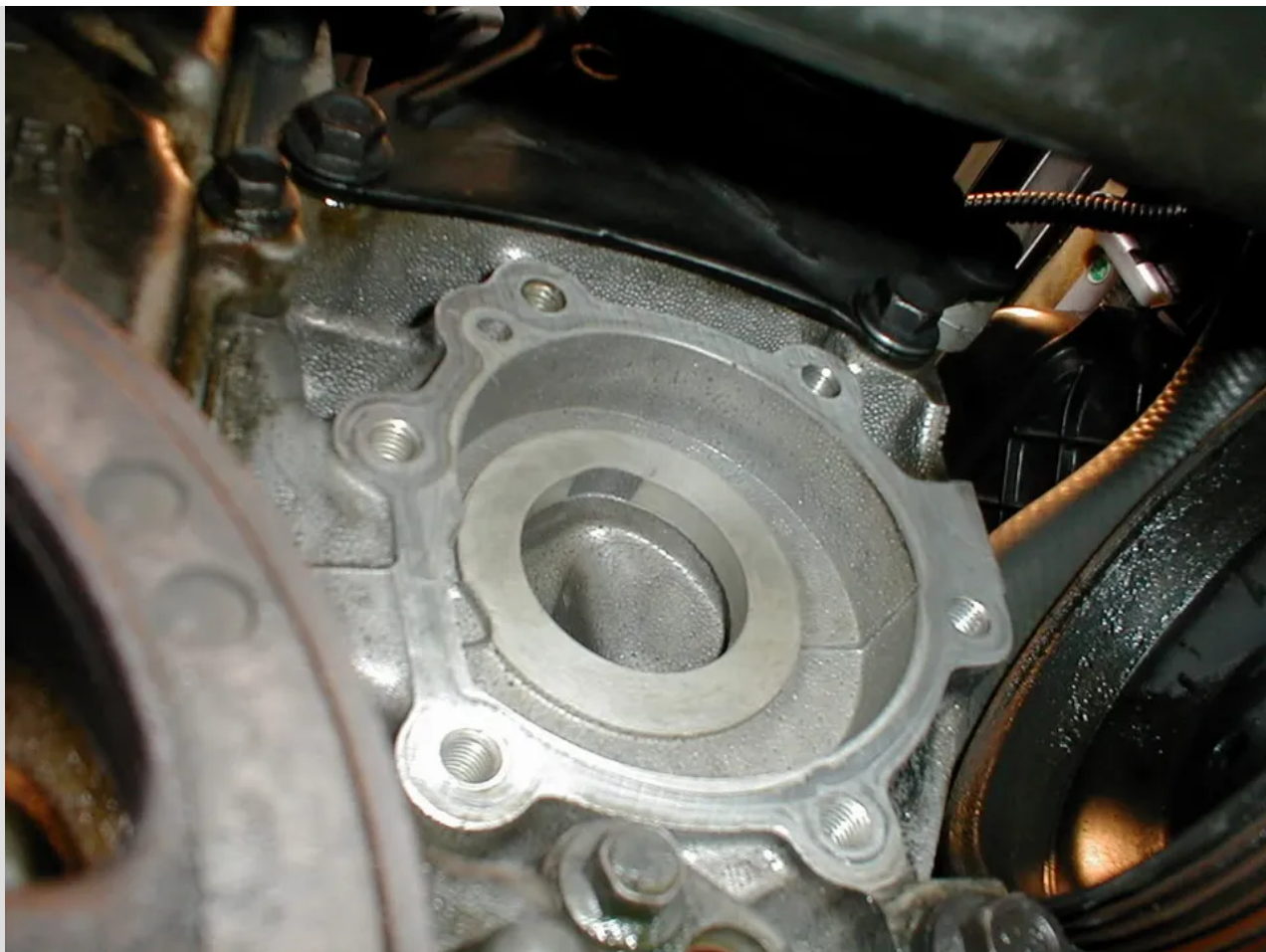
Time to drain the coolant if you havent already. Place a bucket under the draincock and unscrew. You wont get quite enough out but it helps. Not sure if this model has a block drain.. I forgot to even look for it. 😞



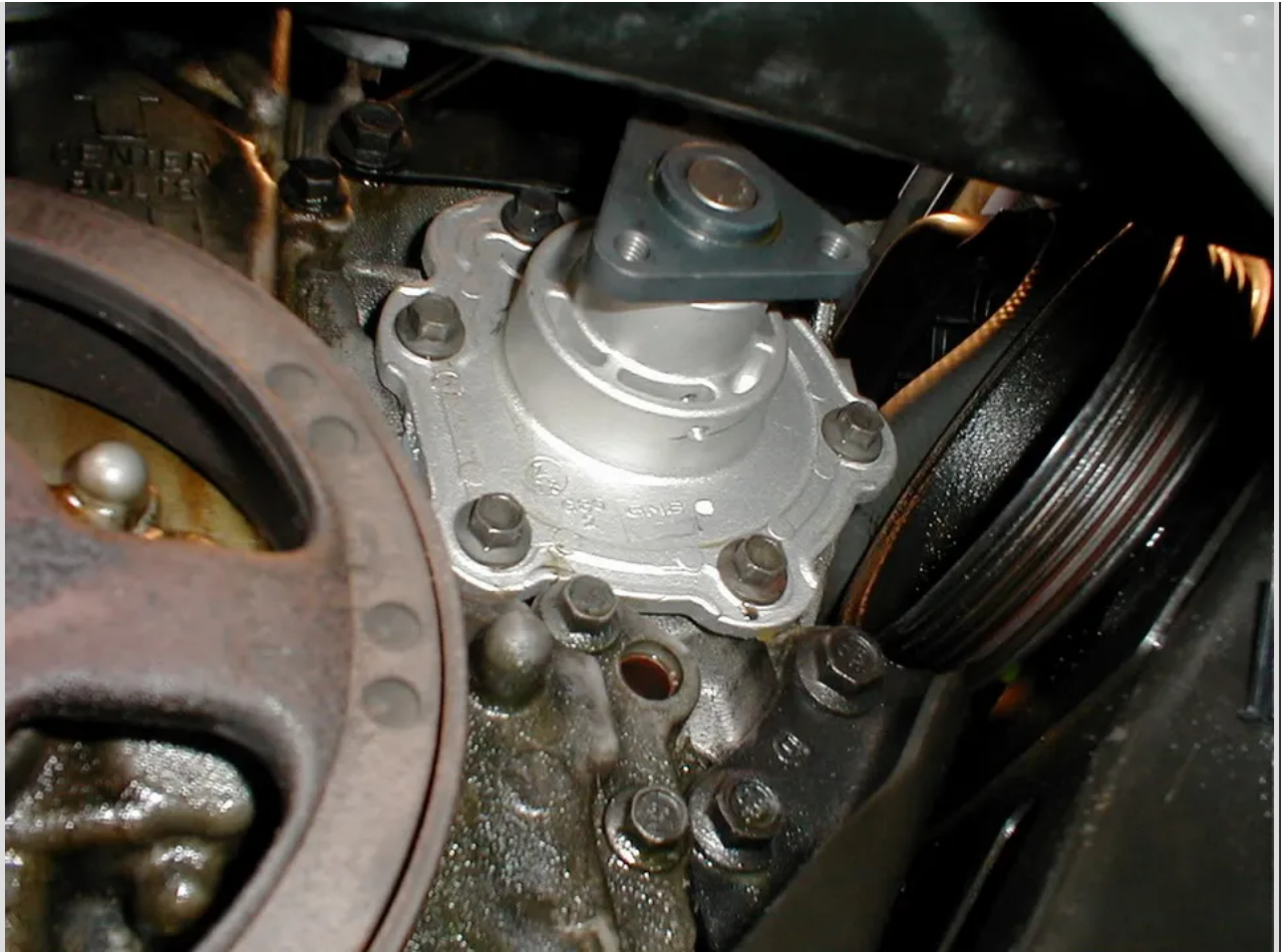
Use a combination of deep 10mm, shallow 10mm, and the 3" extension to remove the water pump bolts. I accessed 2 from the top and the rest from the bottom. Punch holes in a box in the same pattern as the bolts so they go back in their original holes:



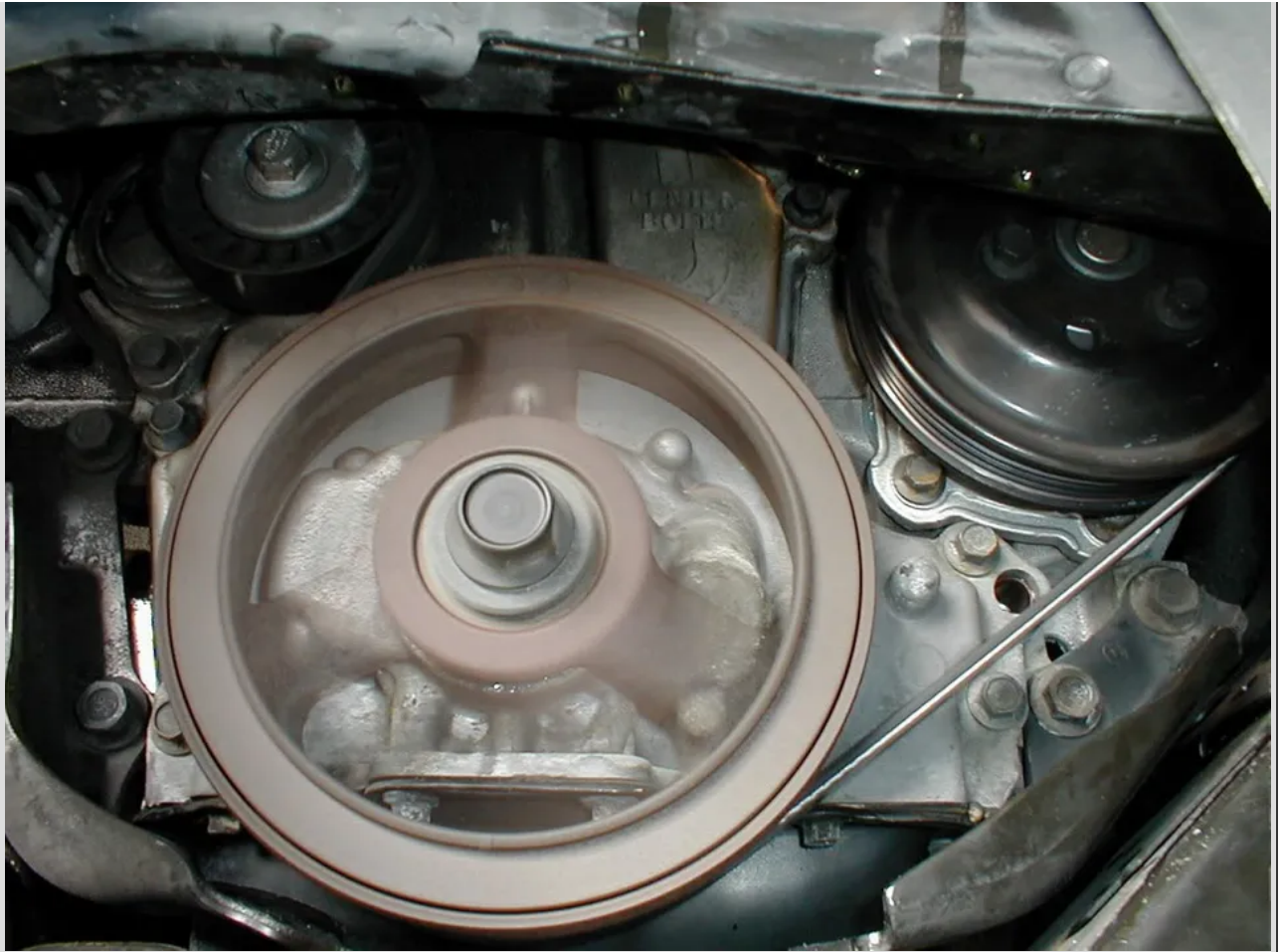
Pry the pump off the block with a screwdriver and be ready for antifreeze to dump out. I used some 320 grid wet sandpaper to clean the mating surface:



Apply a thin layer of blue RTV to the pump mating surface, set the paper gasket in place, then apply another thin layer to the gasket. Put the pump in place and thread the bolts snugly into their original positions, then tighten them in a crossing pattern. They are spec'd for 22lb/ft but good luck getting a standard torque wrench in there. Remember, the block threads are aluminum and will strip before the bolts do. I'd rather do this job 10 times than have to lift the motor and tap the block...



Next, replace the water pump pulley. This was the hardest part because I didnt have a strap-wrench to hold the pulley while tightening the bolts. I used an old serpentine belt wrapped around the pulley and tied to one of the engine lift points - it was barely enough. I'll pick up a strap wrench for next time..



Let the RTV set for an hour or so, replace the belt, then close the radiator draincock and refill with a 50/50 mix of your favorite antifreeze. I prefer to mix it with distilled water in a clean bucket to get the mix perfect. Start the engine and run the heater on high, keeping an eye on the gauge. It will take a few heating / cooling cycles to get all the air out of the system.

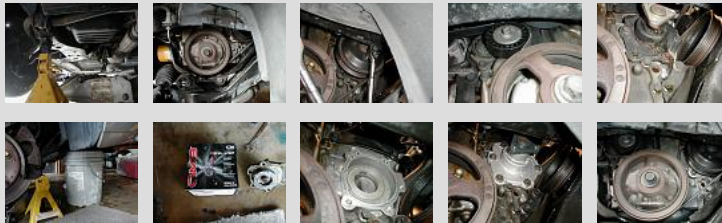
Replace the splash shields and wheel AFTER running the engine to operating temp and checking for leaks.

Total cost was about \$53 for pump, gasket, and a new belt.



Just curious: What would a shop charge for this?

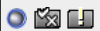
Attached Thumbnails



REWARD EXCELLENCE!



Rate the quality of this post and help *Sevillian273* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!



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01-19-2010, 08:55 AM

#2

[DonP](#)

Re: SL2 Water Pump Replacement w/PICS

Master Member Join Date: Jun 2006 Location: VA Posts: 3,582 DonP's Photos 1995 SL2	That was one ugly old pump! REWARD EXCELLENCE! Rate the quality of this post and help <i>DonP</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
01-19-2010, 09:57 AM #3	
alordofchaos Super Member  Join Date: Jan 2009 Location: Central MI Posts: 12,837 alordofchaos's Photos 2002 SC2 1998 SL2	Re: SL2 Water Pump Replacement w/PICS Very nice writeup and pictures! Around here, \$90 and hour is a good labor rate for a shop and I'm guessing book time would be at least an hour, maybe two. One thing, I notice you used 50/50 to refill your radiator. That may not provide sufficient temp boilover protection - double check the back of your bottle of antifreeze. I <i>think</i> OldNuc has posted the minimum temp to be around 226F but you may want to double check on a search. You may not see any problems, and you may never have any problems, but the cost of adding a little more antifreeze to the mix is pretty low - cheap insurance 😊 ... I'm not worthy to grovel in the shadow of Signmaster's wisdom 11/2016 red 2002 5 spd SC2 151k DD 7/2010 Craigslist white 1997 SC2 project 12/2008 eBay silver 1998 SL2 5 spd 102k, now 201k+ miles REWARD EXCELLENCE! Rate the quality of this post and help <i>alordofchaos</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
01-19-2010, 10:05 AM #4	
Sevillian273 Member  Join Date: Jul 2009 Location: Florida Posts: 105 2001 SL2	Re: SL2 Water Pump Replacement w/PICS Well, according to my hydrometer the boilover temp is 265. REWARD EXCELLENCE! Rate the quality of this post and help <i>Sevillian273</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
01-19-2010, 10:06 AM #5	
Melissa_M Advanced Member Join Date: Jan 2008 Posts: 822 Melissa_M's Photos 1999 SL2	Re: SL2 Water Pump Replacement w/PICS thanks for the writeup, especially the photos Melissa_M ... 1999 SL2 MANUAL ~78K REWARD EXCELLENCE! Rate the quality of this post and help <i>Melissa_M</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
01-19-2010, 01:38 PM #6	
alordofchaos Super Member  Join Date: Jan 2009 Location: Central MI Posts: 12,837 alordofchaos's Photos 2002 SC2 1998 SL2	Re: SL2 Water Pump Replacement w/PICS Quote: Originally Posted by Melissa_M <i>thanks for the writeup, especially the photos</i> +1, great photos really make the How To a great help. Quote: Originally Posted by Sevillian273 <i>Well, according to my hydrometer the boilover temp is 265.</i> If the back of your coolant jug says 50/50 gives you that level of boilover protection, you should be in good shape 😊 http://www.asashop.org/autoinc/feb2001/mech.htm Quote:

01-19-2010, 02:33 PM

#7

OldNuc

Super Member

Join Date: Apr 2008

Location: Far Southwestern Iowa

Posts: 66,693

OldNuc's Photos

1998 SC2

Re: SL2 Water Pump Replacement w/PICS

Quote:

Originally Posted by **Sevillian273**
Well, according to my hydrometer the boilover temp is 265.

If you are calling one of those 5 ball things a "hydrometer" They are grossly inaccurate.

50/50% will be right at 225F if no residual water. If you really want to know what is in there either mix it up from this chart or use a refractometer.

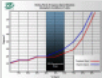


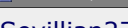
photo section is down so this will not expand. So, it is the blue line and 265F is an 85% concentration. Most of those testers just assume the system is at 15psig which will get you a pressurized boiling point of about that. Your atmospheric boiling point is about 225F. This will pressurize your system slightly every time the engine heats up to the fan on point. And if you flushed out the system with water and then refilled with the 50/50 blend you are actually at 47/53, 47% antifreeze and an atmospheric boiling point of 223F. Maintaining the system pressure as low as possible reduces the stress on the radiator and water pump seal.

Nice writeup and that is the pump to use. They are worth the cost.

REWARD EXCELLENCE!

 Rate the quality of this post and help OldNuc reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

 quote  

01-19-2010, 04:25 PM #9 Sevillian273 Member  Join Date: Jul 2009 Location: Florida Posts: 105 2001 SL2	Re: SL2 Water Pump Replacement w/ PICS I used the prestone hydrometer they sell at walmart for around \$4. It's the turkey baster type with the dial. One side is for boiler protection and the other is for freeze protection. The measurement was taken at around 70 degrees F. Yes I do believe it accounts for 15psi in the reading. What is the operating pressure of the cooling system in this car? The car belongs to my mother, I know very little about it specifically. I dont buy that 50/50 pre mix stuff because I think it's a waste of money. I'm not going to pay a premium for water. I mix in a bucket to exactly 50/50. I replaced the radiator this october and did a complete flush of the system. I vacuumed out every last drop of old coolant from every accessible orifice with a shop vac before adding the 50/50. I use Prestone 'All Makes All Models' coolant. Not sure if it's ethylene or propylene based... That brown 'ooze' coming from the old pump is not rust. It's bar's leaks 'gold seal' powder. It's an organic mix of ginger root and walnut shells. The stuff was sold in pellet form and required by GM in the late 80's/early 90's most namely for aluminum block Cadillac engines to prevent intake gasket issues. It acts like a blood clot on a leak. As big as that leak actually was, that stuff
---	---

slowed it to a drip which actually took several days to cause the coolant light to come on. I give it credit for not causing a large enough coolant loss to prevent an overheat on the road. I've never actually seen the stuff work before my eyes before. Now I'm a true believer. I use one tube in this car and two in my cadillac at every coolant flush.

REWARD EXCELLENCE!

Rate the quality of this post and help [Sevillian273](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

[quote](#) [+](#) [-](#)

01-19-2010, 04:39 PM

#10

[azrocketman](#)

Member



Join Date: Jun 2009
Location: Tucson, AZ
Posts: 276

1997 SL1

**Re: SL2 Water Pump Replacement w/PICS**

You might add that the SL and SL1 are similar (if not identical).

Steve

REWARD EXCELLENCE!

Rate the quality of this post and help [azrocketman](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

[quote](#) [+](#) [-](#)

01-19-2010, 04:46 PM

#11

[Sevillian273](#)

Member



Join Date: Jul 2009
Location: Florida
Posts: 105

2001 SL2

**Re: SL2 Water Pump Replacement w/PICS**

Quote:

Originally Posted by [azrocketman](#) [↗](#)
You might add that the SL and SL1 are similar (if not identical).

Steve

I would assume so since that's how GM keeps costs down - interchangeability.... Makes it easier on the DIY'er too! This is the first and only Saturn I've ever worked on and It's not even my car. I mostly come here to learn but I figure a picture or two is worth a thousand words.

REWARD EXCELLENCE!

Rate the quality of this post and help [Sevillian273](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

[quote](#) [+](#) [-](#)

01-19-2010, 05:36 PM

#12

[geartooth94](#)

Master Member



Join Date: Mar 2003
Location: Allentown, PA
Posts: 3,879

[geartooth94's Photos](#) **Re: SL2 Water Pump Replacement w/PICS**

crankshaft pulley bolt head is 21 mm.

also the block drain for coolant is underneath the thermostat housing, if you ever need to drain again. get at it from the bottom.

...
1996 Dodge Avenger ES: 2.5L V6

REWARD EXCELLENCE!

Rate the quality of this post and help [geartooth94](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

[quote](#) [+](#) [-](#)

01-19-2010, 06:19 PM

#13

[OldNuc](#)

Super Member



Join Date: Apr 2008
Location: Far Southwestern
Iowa
Posts: 66,693

[OldNuc's Photos](#)

1998 SC2

Re: SL2 Water Pump Replacement w/PICS

Quote:

Originally Posted by [Sevillian273](#) [↗](#)
I used the prestone hydrometer they sell at walmart for around \$4. It's the turkey baster type with the dial. One side is for boilover protection and the other is for freeze protection. The measurement was taken at around 70 degrees F. Yes I do believe it accounts for 15psi in the reading. What is the operating pressure of the cooling system in this car? The car belongs to my mother, I know very little about it specifically.

Until something goes wrong it should be about 1psi. If the mix is a bit weak you will have a pressure of about 4 to 5 psi.

I dont buy that 50/50 pre mix stuff because I think it's a waste of money. I'm not going to pay a premium for water. I mix in a bucket to exactly 50/50. I replaced the radiator this october and did a complete flush of the system. I vacuumed out every last drop of old coolant from every accessible orifice with a shop vac before adding the 50/50. I use Prestone 'All Makes All Models' coolant. Not sure if it's ethylene or propylene based...

It is ethylene glycol based and is considered a universal coolant. It is HOAT technology and it does contain 2-EHA. It is a drastic improvement over DexCool. I would add about 8oz of 100% to the reservoir after removing enough to get room. That will give you some margin.

That brown 'ooze' coming from the old pump is not rust. It's bar's leaks 'gold seal' powder. It's an organic mix of ginger root and walnut shells. The stuff was sold in pellet form and required by GM in the late 80's/early 90's most namely for aluminum block Cadillac engines to prevent intake gasket issues. It acts like a blood clot on a leak. As big as that leak actually was, that stuff slowed it to a drip which actually took several days to cause the coolant light to come on. I give it

credit for not causing a large enough coolant loss to prevent an overheat on the road. I've never actually seen the stuff work before my eyes before. Now I'm a true believer. I use one tube in this car and two in my cadillac at every coolant flush.

Saturn added that stuff from the factory also. You really do not need it if you get rid of the DexCool and the 2-EHA. Other than that it is good to use.

REWARD EXCELLENCE!

Rate the quality of this post and help *OldNuc* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote + ?

01-19-2010, 06:27 PM

#14

Sevillian273

Member



Join Date: Jul 2009
Location: Florida
Posts: 105

2001 SL2

**Re: SL2 Water Pump Replacement w/PICS**

Thanks, I'll top it off with some 100% tonight. What would a 57/43 mix read on the hydrometer when the car is cold?

REWARD EXCELLENCE!

Rate the quality of this post and help *Sevillian273* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote + ?

01-19-2010, 07:16 PM

#15

OldNuc

Super Member



Join Date: Apr 2008
Location: Far Southwestern Iowa
Posts: 66,693

[OldNuc's Photos](#)

1998 SC2

**Re: SL2 Water Pump Replacement w/PICS**

Yes or a bit more. The 57% mix is a freeze point of -50F to -60F and that will deal with the inaccuracy of those testers. FYI you really do not get into trouble with ethylene glycol until you get the concentration up to 85% in a high performance engine.

REWARD EXCELLENCE!

Rate the quality of this post and help *OldNuc* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

quote + ?

01-19-2010, 09:07 PM

#16

Sevillian273

Member



Join Date: Jul 2009
Location: Florida
Posts: 105

2001 SL2

**Re: SL2 Water Pump Replacement w/PICS**

As I understand, as the concentration of antifreeze goes up, its ability to transfer heat suffers. Thats why I usually go 50/50 since freezing is not an issue down here in Florida. Straight water actually has the best cooling efficiency provided it does not boil. Obviously that is not an option in a normal vehicle... I never considered the pressure-wear issue. I hope to never EVER see the headgasket in this engine or any other for that matter.

Thanks to all for your input! 😊

REWARD EXCELLENCE!

Rate the quality of this post and help *Sevillian273* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

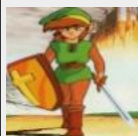
quote + ?

01-20-2010, 03:57 AM

#17

adventureoflink

Master Member



Join Date: Apr 2009
Location: 255.255.255.255
Posts: 6,853

1997 SL2

**Re: SL2 Water Pump Replacement w/PICS**

Being one of a few people here that takes their vehicles to shops when something is out of their league (or lack of proper tools), I had my water pump replaced at a shop, and it cost me \$320. However, my estimate would be \$300-\$400. YMMV

...
97 SL2
DOB: 3/19/97
Date Obtained: 5/30/07
Status: Alive, 1/2 exhaust

2004 Merc G.Marquis GS
DOB: 2/4/04
Date Obtained: 7/6/12
Status: Alive, no heat

REWARD EXCELLENCE!

Rate the quality of this post and help *adventureoflink* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

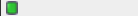
quote + ?

01-20-2010, 06:02 AM

#18

mjoekingz28

Member

**Re: SL2 Water Pump Replacement w/PICS**

Join Date: Aug 2009
Location: I-20 @ I-55
Posts: 386

1998 SC2

Since you removed the pulley with enough tension from the belt, then why couldn't you have installed it just like that?
Tighten pulley as much as possible by hand (to prevent misalignment) then install old belt and finish torquing.

Where did you find that water pump?

REWARD EXCELLENCE!

 Rate the quality of this post and help [mjoekingz28](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

 quote  

01-20-2010, 06:57 AM

#19

Sevillian273

Member



Join Date: Jul 2009
Location: Florida
Posts: 105

2001 SL2

Re: SL2 Water Pump Replacement w/PICS

Quote:

Originally Posted by [mjoekingz28](#) 
Since you removed the pulley with enough tension from the belt, then why couldn't you have installed it just like that?

I tried that. I installed a new belt in the process and it was made of a harder rubber with less grip. The pulley just slipped on it. Its a PITA to snake it around all the pulleys while fighting the tensioner so I didnt want to do that again with the old belt just to tighten the pulley. The old belt was very sticky from all the coolant dripping on it.

Quote:

Originally Posted by [mjoekingz28](#) 
Where did you find that water pump?

Advance auto parts. It was the cheapest one they had at \$32.99 I believe. Its made of aluminum - much better than the OEM stamped steel which cracked at its welds.

Quote:

Originally Posted by [adventureoflink](#) 
Being one of a few people here that takes their vehicles to shops when something is out of their league (or lack of proper tools), I had my water pump replaced at a shop, and it cost me \$320. However, my estimate would be \$300-\$400. YMMV

Yikes. That looks like about 2.5 labor + parts... That's why I try to avoid garages at all costs. Even with tires, I remove them myself and bring them in. Call me paranoid but I dont like the idea of some underpaid lug monkey behind the wheel of my car who doesn't give a rat's ass about MY stuff.

REWARD EXCELLENCE!

 Rate the quality of this post and help [Sevillian273](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

 quote  

01-20-2010, 12:06 PM

#20

OldNuc

Super Member



Join Date: Apr 2008
Location: Far Southwestern Iowa
Posts: 66,693

[OldNuc's Photos](#) 

1998 SC2

Re: SL2 Water Pump Replacement w/PICS

Quote:

Originally Posted by [Sevillian273](#)
Call me paranoid but I dont like the idea of some underpaid lug monkey behind the wheel of my car who doesn't give a rat's ass about MY stuff.

That is my opinion exactly. Do it yourself and then you will know its done correctly.

REWARD EXCELLENCE!

 Rate the quality of this post and help [OldNuc](#) reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

 quote  

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01-23-2003 09:55 AM